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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,399	08/28/2001	Yasushi Takatori	96790P498	6150

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EXAMINER

HASHEM, LISA

ART UNIT PAPER NUMBER

2614

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/941,399

Applicant(s)

TAKATORI ET AL.

Examiner

Lisa Hashem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 6, 7, 9, and 10 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. Patent Application Publication No. 2003/0171134 by Doi et al, hereinafter Doi.

Regarding claim 6, Doi discloses an adaptive antenna control method used for a radio communication system or PDMA system (section 0006, lines 1-10; section 0038, line 1 – section 0053, line 2; Fig. 10),
the radio communication system comprising a plurality of radio base stations (Fig. 10: 1, 6) and a plurality of terminal stations (Fig. 10: 4, 8; PS1, PS2) capable of communicating with the radio base stations,
each radio base station including an adaptive antenna having a plurality of antenna elements (Fig. 1: #1 thru #4; Fig. 10, 2),
weighting circuits for respectively weighting reception signals of the plurality of antenna elements (Fig. 1: 12-1.1 thru 12-4.1), and
a signal combining circuit (Fig. 1, 13.1) for combining the reception signals of the antenna elements weighted by the weighting circuits (section 0083, lines 1-11), the method comprising:
for reception by each radio base station (Figs: 1, 4, 5; Fig. 7, 10: 1, 6),

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estimating an interference wave power given by a transmission signal from each of the plurality of terminal stations,

estimating a sum of the interference wave power ($U(t-T_2)$)

and

determining at least a weight (W_u) in the adaptive antenna of each radio base station and a transmission power ($x_1(t)$ to $x_4(t)$) of each terminal station to minimize a sum of square errors between reception signals and desired signals for all the terminal stations which simultaneously use the same communication channel by minimizing the sum of the interference wave power obtained (section 0014, line 1- section 0030, line 4; section 0110, line 1- section 0125, line 6; section 0140, line 1 – section 0147, line 8; section 0163, line 1 – section 0179, line 8).

Regarding claim 7, a method according to claim 1, wherein Doi further discloses a predetermined known signal is transmitted from each of the plurality of terminal stations to each radio base station, and in each radio base station, a transfer function is obtained for each terminal station by checking a correlation between the known signal and the reception signal actually received from each terminal station, and the interference wave power is estimated on the basis of the transfer function (section 0111, line 1 – section 0133, line 7; section 0163, line 1 – section 0179, line 8).

Regarding claim 9, a method according to claim 7, wherein Doi further discloses a sum result obtained by totaling, for all the antenna elements, for all the terminal stations except a station which transmits a target signal, and for the plurality of radio base stations, the interference wave powers obtained from the transfer functions obtained for the antenna elements of the radio base stations and the weights applied to the antenna elements of a receiving station is

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used as an evaluation value of the interference wave power (section 0111, line 1 – section 0133, line 7; section 0175, line 1 – section 0179, line 8).

Regarding claim 10, a method according to claim 7, wherein Doi further discloses equation (3) representing a weight vector $W_u(n)$ or W_1 of a reception system, which is to be given to the weighting circuit of the adaptive antenna of an n th radio base station (section 0099, line 1 – section 0100, line 3), and equation (4) representing a transmission power $G_t(m)$ or R of an m th terminal station are alternately repeatedly calculated, and the weight vector $W_u(n)$ of a calculation result which has converged is given to each weighting circuit (section 0111, line 1 – section 0125, line 6; section 0175, line 1 – section 0179, line 8). Assume communication between n th base station and m th terminal station (equations (1) and (2) omitted for brevity).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doi, as applied to claim 6, and in further view Kasami.

Regarding claim 8, a method according to claim 6, wherein Doi does not disclose an intensive control station.

Kasami discloses an adaptive antenna control method used for a radio communication system built by a plurality of radio base stations and a plurality of terminal stations or mobile stations capable of communicating with the radio base stations, each radio base station including

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an adaptive antenna having a plurality of antenna elements (see Abstract), comprising: a transfer function (signal) obtained by each radio base station (via a mobile station) is transferred to an intensive control station connected to each of the plurality of radio base stations through a wired communication line or wireless communication channel, and the intensive control station determines the weight in the adaptive antenna of each radio base station (see Abstract; section 0013, line 1 – section 0021, line 4).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the adaptive antenna control method of Doi to include an intensive control station as taught by Kasami. One of ordinary skill in the art would have been lead to make such a modification since the intensive control station controls the plurality of base stations and the plurality of terminal stations and calculates the weight in the adaptive antenna of each radio base station.

Allowable Subject Matter

5. Claims 1-5 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

The very specific nature of the ‘...estimating an interference wave power given by the transmission signal from each of the plurality of radio base stations...’ of claim 1 was not found, suggested, or made evident by the prior art. Claims 2-5 are dependent upon claim 1 and as such are allowable.

Response to Arguments

7. In regards to Applicant’s arguments regarding claim 6, Doi clearly discloses:

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an uplink transmission power at the time of transmitting from a terminal station to a base station (section 0014 to section 0030; section 0078 to section 0147). Doi also discloses that interference wave power is positively estimated (section 0111 to section 0147; section 0163 to section 0179).

8. Applicant's arguments with respect to claims 6-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 Form.

10. Any response to this action should be mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Or faxed to:

(571) 273-8300 (for formal communications intended for entry)

Or call:

(571) 272-2600 (for customer service assistance)


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (571) 272-7542. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

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12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lh
January 5, 2007



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